

FOE MPTO-1390
(REV. 9-2001)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

Mo-6877/NIT-364

U.S. APPLICATION NO. (If known, see 37 CFR 1.5

To Be Assigned

INTERNATIONAL APPLICATION NO.

INTERNATIONAL FILING DATE

PRIORITY DATE CLAIMED

PCT/IB00/00868

28 June 2000 (28.06.00)

06 July 1999 (6.07.99)

TITLE OF INVENTION

NEMATICIDAL TRIFLUOROBUTENES

APPLICANT(S) FOR DO/EO/US WATANABE, Yukiyoishi; ISHIKAWA, Koichi; OTSU, Yuichi and SHIBUYA, Katsuhiko

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.
4. ☒ The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
- a. ☒ is attached hereto (required only if not communicated by the International Bureau).
- b. ☐ has been communicated by the International Bureau.
- c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
- ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
- a. ☐ is attached hereto.
- b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
- ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
- a. ☐ are attached hereto (required only if not communicated by the International Bureau).
- b. ☐ have been communicated by the International Bureau.
- c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
- d. ☐ have not been made and will not be made.
- ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).
- ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11 to 20 below concern document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
14. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
15. ☐ A substitute specification.
16. ☐ A change of power of attorney and/or address letter.
17. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
18. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
19. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
20. ☒ Other items or information:

Form PTO 1449 w/references

To Be Assessed 10/030361 PCT/IB00/00868

ATTORNEY'S DOCKET NUMBER

Mo-6877/NIT-364

21. ☒ The following fees are submitted:**BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):**

Neither international preliminary examination fee (37 CFR 1.482)
nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO
and International Search Report not prepared by the EPO or JPO. \$1040.00

International preliminary examination fee (37 CFR 1.482) not paid to
USPTO but International Search Report prepared by the EPO or JPO \$890.00

International preliminary examination fee (37 CFR 1.482) not paid to USPTO
but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$740.00

International preliminary examination fee (37 CFR 1.482) paid to USPTO
but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$710.00

International preliminary examination fee (37 CFR 1.482) paid to USPTO
and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00

ENTER APPROPRIATE BASIC FEE AMOUNT =**CALCULATIONS PTO USE ONLY**

\$ 890.00

Surcharge of \$130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30
months from the earliest claimed priority date (37 CFR 1.492(e)).

\$ 0.00

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	
Total claims	9 - 20 =	0	x \$18.00	\$ 0.00
Independent claims	1 - 3 =	0	x \$84.00	\$ 0.00
MULTIPLE DEPENDENT CLAIM(S) (if applicable)				+ \$280.00
TOTAL OF ABOVE CALCULATIONS =				\$ 1,170.00

☐ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above
are reduced by 1/2. + \$ 0.00

SUBTOTAL =

Processing fee of \$130.00 for furnishing the English translation later than ☐ 20 ☐ 30
months from the earliest claimed priority date (37 CFR 1.492(f)).

\$ 0.00

TOTAL NATIONAL FEE =

\$ 1,170.00

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be
accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +

\$ 0.00

TOTAL FEES ENCLOSED =

\$ 1,170.00

Amount to be
refunded: \$

charged: \$

a. ☐ A check in the amount of \$ _____ to cover the above fees is enclosed.

b. ☒ Please charge my Deposit Account No. 13-3848 in the amount of \$ 1,170.00 to cover the above fees.
A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any
overpayment to Deposit Account No. 13-3848. A duplicate copy of this sheet is enclosed.

d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card
information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR
1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:



00157

PATENT TRADEMARK OFFICE

SIGNATURE

Raymond J. Harmuth

NAME

33,896

REGISTRATION NUMBER

10/030361

JC10 Rec'd PCT/PTO 02 JAN 2002

PATENT APPLICATION
Mo-6877
NIT-364

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION OF)
YUKIYOSHI WATANABE ET AL) PCT/IB00/00868
SERIAL NUMBER: TO BE ASSIGNED)
FILED: HEREWITH)
TITLE: NEMATICIDAL)
TRIFLUOROBUTENES)

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Upon the granting of a serial number and filing date and prior to the examination of the subject application, kindly amend the application as follows:


Please amend the claims as follows. A marked up copy of the claims to show changes is attached to this Preliminary Amendment.

"Express Mail" mailing label number ET700175995US

Date of Deposit January 2, 2002

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner of Patents and Trademarks, Washington, D.C. 20231

Donna J. Veatch
(Name of person mailing paper or fee)

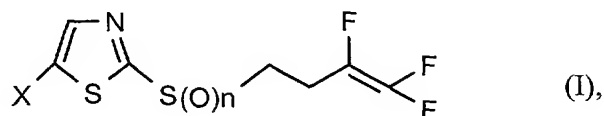

Signature of person mailing paper or fee)

IN THE CLAIMS:

Please cancel Claim 9.

Please amend Claims 1-8 and 10 as follows:

1. (Once Amended) A compound of the Formula (I)



wherein

X represents halogen, and

n represents 0, 1 or 2.

2. (Once Amended) A compound of the Formula (I) according to Claim 1, wherein

X represents fluoro, chloro or bromo, and

n represents 0 or 2.

3. (Once Amended) A compound of the Formula (I) according to Claim 1 wherein

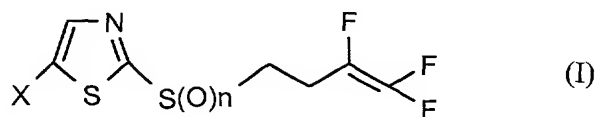
X represents chloro or bromo, and

n represents 2.

4. (Once Amended) A compound of the Formula (I) according to Claim 1 wherein

X represents chloro.

5. (Once Amended) A process for preparing a compound of the Formula (I)



wherein

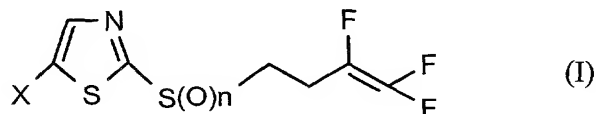
X is as defined in one of Claims 1 to 4, and

n represents 0,

comprising the step of:

reacting 2-(3,4,4-trifluoro-3-butenylthio)thiazole with a halogenating agent, optionally in the presence of an inert solvent.

6. (Once Amended) A process for preparing a compound of the Formula (I)



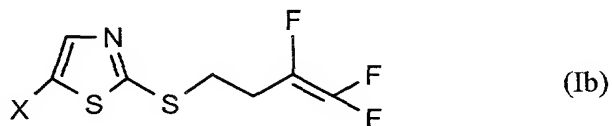
wherein

n represents 1 or 2, and

X is as defined in one of Claims 1 to 4,

comprising the step of:

reacting a compound of the Formula (Ib)



wherein

X is as defined in one of Claims 1 to 4,

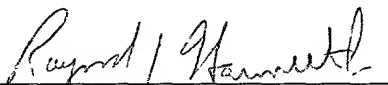
with an oxidizing agent, optionally in the presence of an inert solvent.

7. (Once Amended) A nematicidal composition comprising at least one compound of the Formula (I) according to one of Claims 1 to 4.
8. (Once Amended) A method of combating nematodes, comprising the step of allowing an effective amount of a compound of the Formula (I) according to one of Claims 1 to 4 to act on a member selected from the group consisting of nematodes, a habitat of said nematodes and combinations thereof.
10. (Once Amended) A process for preparing a nematicidal composition, comprising the step of mixing a compound of the Formula (I) according to one of Claims 1 to 4 with a member selected from the group consisting of an extender a surface active agent and combinations thereof.

REMARKS

Claims 1-10 were originally filed in this case. Upon entry of this Preliminary Amendment Claim 9 will be cancelled and Claims 1-8 and 10 will be pending. These amendments are made to place the claims in conformance with U.S. patent practice. These amendments are not in derogation of any prior art, and Applicant respectfully asserts that it is entitled to the claims as amended and any equivalents thereof.

Respectfully submitted,

By 
Raymond J. Harmuth
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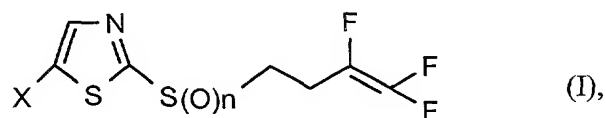
Version Marked to Show Changes

IN THE CLAIMS:

Please cancel Claim 9.

Please amend Claims 1-8 and 10 as follows:

1. (Once Amended) A ~~C~~ompounds of the ~~f~~Formula (I)



wherein

X represents halogen, and

n represents 0, 1 or 2.

2. (Once Amended) A ~~C~~ompounds of the ~~f~~Formula (I) according to ~~e~~Claim 1, wherein

X represents fluoro, chloro or bromo, and

n represents 0 or 2.

3. (Once Amended) A ~~C~~ompounds of the ~~f~~Formula (I) according to ~~e~~Claim 1 ~~or claim 2~~, wherein

X represents chloro or bromo, and

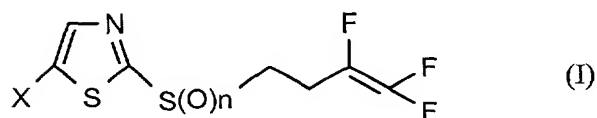
n represents 2.

4. (Once Amended) A ~~C~~ompounds of the ~~f~~Formula (I) according to ~~e~~Claims 1 ~~to 3~~,

wherein

X represents chloro.

5. (Once Amended) ~~A~~ Process for preparing a compounds of the ~~f~~Formula (I)



wherein

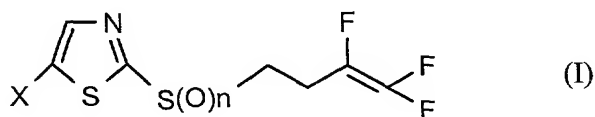
X is as defined in one of ~~e~~Claims 1 to 4, and

n represents 0,

~~characterized in that~~ comprising the step of:

reacting 2-(3,4,4-trifluoro-3-butenylthio)thiazole ~~is reacted~~ with a halogenating agent, ~~if appropriate~~ optionally in the presence of an inert solvents.

6. (Once Amended) ~~A~~ Process for preparing a compounds of the ~~f~~Formula (I)

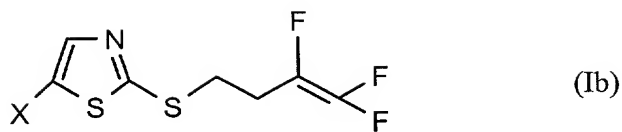


wherein

n represents 1 or 2, and

X is as defined in one of ~~e~~Claims 1 to 4, ~~characterized in that~~ comprising the step of:

reacting a compounds of the ~~f~~Formula (Ib)



wherein

X is as defined in one of eClaims 1 to 4,

~~are reacted~~ with an oxidizing agent, ~~if appropriate~~ optionally in the presence of an inert solvents.

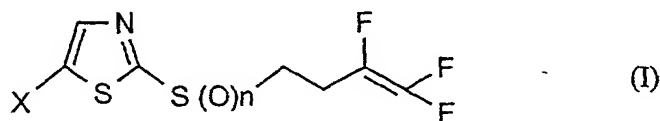
7. (Once Amended) ~~A Nematicidal compositions, characterized in that they contain~~ comprising at least one compound of the ~~f~~Formula (I) according to one of eClaims 1 to 4.
8. (Once Amended) A method of combating nematodes, ~~characterized in that~~ comprising the step of allowing an effective amount of a compounds of the fFormula (I) according to one of eClaims 1 to 4 ~~are allowed to act on a member selected from the group consisting of nematodes, and/or their a habitat of said nematodes and combinations thereof.~~
10. (Once Amended) ~~A P~~process for preparing a nematicidal compositions, ~~characterized in that the~~ comprising the step of mixing a compounds of the fFormula (I) according to one of eClaims 1 to 4 ~~are mixed with a member selected from the group consisting of an extenders and/or a surface active agents and combinations thereof.~~

NEMATICIDAL TRIFLUOROBUTENES

The present invention relates to novel trifluorobutenes and their use as nematicides.

5 US Patent No. 3,518,172 describes trifluorobutenyl compounds which have nematicidal activity. Japanese Laid-open Patent Publication (PCT) No. 500037/1988 (= WO 86/07590) also describes that some kinds of polyhaloalkene compounds have nematicidal activity. Further, WO 95/24403 describes that 4,4-difluorobutenyl compounds have nematicidal activity. Japanese Laid-open Patent Application No.
10 176141/1997 mentions thiazole derivatives having insecticidal and acaricidal activity.

There have now been found novel trifluorobutenes of the formula (I)

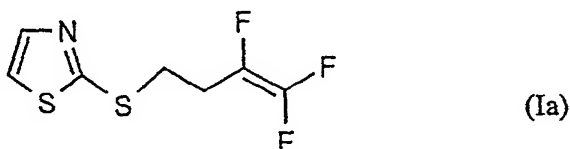


in which

X represents halogen and

20 n represents 0, 1 or 2.

The compounds of the formula (I) in which n represents 0 can be obtained when trifluorobutenes of the formula (Ia)

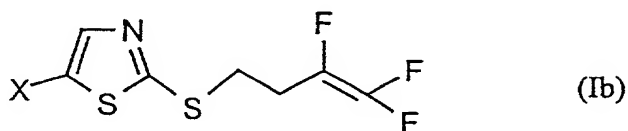


are reacted with a halogenating agent, optionally in the presence of one or more inert diluents (process (A)).

The compounds of the formula (I) in which

n represents 1 or 2

can be obtained when compounds of the formula (Ib)



in which

X is the same as defined above

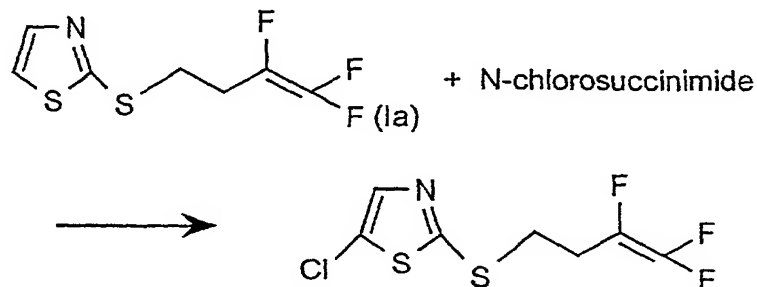
are reacted with an oxidizing agent, optionally in the presence of one or more inert diluents (process (B)).

The compounds of the formula (I) of the present invention have strong nematocidal activity and show good compatibility with various crops. According to the present invention the compounds of the formula (I) have surprisingly strong nematocidal activity compared with the known compounds described in the aforementioned literature.

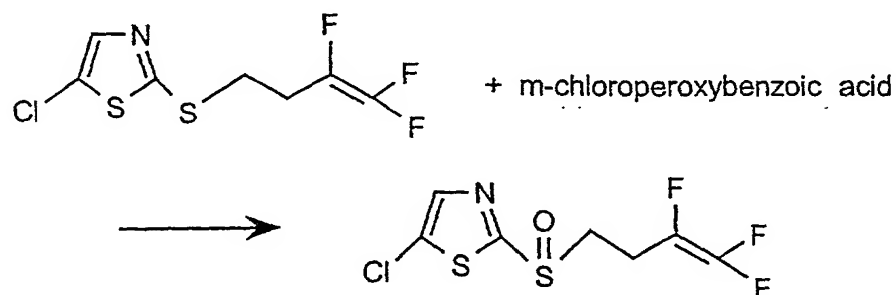
In the present specification X preferably represents fluoro, chloro or bromo. X particularly preferably represents fluoro or chloro. X very particularly preferably represents chloro.

In the present specification n preferably represents 0 or 2. n particularly preferably represents 2.

Process (A) for preparing compounds of the formula (I) of the present invention can be represented by the following reaction scheme in which N-chlorosuccinimide is exemplarily used as halogenating agent;



Process (B) for preparing compounds of the formula (I) of the present invention can be represented by the following reaction in which 5-chloro-2-(3,4,4-trifluoro-3-butenylthio)thiazole is used as a starting material and m-chloroperoxybenzoic acid is exemplarily used as oxidizing agent.



15 2-(3,4,4-trifluoro-3-butenylthio)-thiazole is a known compound described in Japanese Laid-open Patent Publication (PCT) No. 500037/1988 (= WO 86/07590). Compounds of formula (Ib), which are used as starting material in process (B), correspond to the compounds of the formula (I) of the present invention in which n represents 0 and can be synthesized according to the aforementioned process (A).

Halogenating agents used in Process (A) can be agents usually used for this purpose in organic chemistry and which are known to a person skilled in the art, including for example sulfonyl chloride, N-chlorosuccinimide, N-bromosuccinimide, trichloroisocyanuric acid, potassium fluoride, sodium chlorate, phosphorus pentachloride, titanium (IV) chloride, chlorine gas, bromine, iodine etc.

Oxidizing agents used for the oxidation of the above-mentioned compounds of the formula (Ib) in process (B) can be agents usually used for this purpose in organic chemistry and which are known to a person skilled in the art including for example hydrogen peroxide water, m-chloroperoxybenzoic acid, peroxyacetic acid, peroxybenzoic acid, magnesium monoperoxyphthalate, potassium peroxymonosulfate, etc.

The reaction of the above-mentioned process (A) is preferably conducted in the presence of an adequate diluent. Diluents which can be used in this process can for example be water; aliphatic, alicyclic and aromatic hydrocarbons (which can be optionally chlorinated) such as hexane, cyclohexane, petroleum ether, ligroine, benzene, methylene chloride, chloroform, carbon tetrachloride, ethylene chloride, chlorobenzene etc.; ethers, such as diethyl ether, methyl ethyl ether, di-isopropyl ether, dibutyl ether, propylene oxide, dioxane, tetrahydrofuran etc.; nitriles, such as acetonitrile, propionitrile, acrylonitrile etc.; acid amides, such as dimethylformamide, dimethylacetamide, N-methylpyrrolidone etc.; sulfones and sulfoxides, such as dimethyl sulfoxide, sulfolane etc.

The reaction temperatures of process (A) according to the invention can be varied over a relatively wide range. In general, temperatures in a range of between 0 and 200°C, preferably between 20 and 150°C are employed. The process (A) according to the invention is generally carried out under normal pressure. However, it is possible to carry out the process (A) under elevated pressure or under reduced pressure, in general between 0.1 bar and 10 bar.

To carry out the process (A) according to the invention, the starting materials are

generally employed in approximately equimolar amounts. However, it is also possible to use one of the components in a relatively large excess. Work-up is carried out according to customary methods (cf. the preparation examples).

5 For example, the compound of the formula (I) in which n represents 0 and X represents chloro can be obtained by reacting 1-1.2 moles of N-chlorosuccinimide with 1 mole of 2-(3,4,4-trifluoro-3-butenylthio)thiazole in carbon tetrachloride under reflux by heating.

10 The reaction of the above-mentioned process (B) is preferably conducted in the presence of an adequate diluent. Diluents which can be used in this process can for example be water; aliphatic, alicyclic and aromatic hydrocarbons (which can be optionally chlorinated), such as hexane, cyclohexane, petroleum, ether, ligroine, benzene, toluene, xylene, methylene chloride, chloroform, carbon tetrachloride, ethylene chloride, chlorobenzene etc.; ethers, such as diethyl ether, methyl ethyl ether, di-isopropyl ether, dibutyl ether, propylene oxide, dioxane, tetrahydrofuran etc.; nitriles, such as acetonitrile, propionitrile, acrylonitrile etc.; alcohols, for example methanol, ethanol, isopropanol, butanol, ethylene glycol etc.; esters, for example ethyl acetate, amyl acetate etc.; acid amides, for example dimethyl-
15 formamide, dimethylacetamide, N-methylpyrrolidone etc.; sulfones and sulfoxides, for example dimethyl sulfoxide, sulfolane etc.; carboxylic acids, for example formic acid, acetic acid etc.

20 The reaction temperatures of process (B) according to the invention can be varied over a relatively wide range: In general, temperatures in a range of between 0 and 150°C, preferably between 0 and 120°C are employed. The process (B) according to the invention is generally carried out under normal pressure. However, it is also possible to carry out the process (B) under elevated pressure or under reduced pressure, in general between 0.1 bar and 10 bar.

30 To carry out the process (B) according to the invention, the starting materials are generally employed in approximately equimolar amounts. However, it is also

possible to use one of the components in a relatively large excess. Work-up is carried out according to customary methods (cf. the preparation examples).

For example, compounds of the formula (I) in which n represents 1 can be obtained by reacting, 1-2 moles of m-chloroperoxybenzoic acid with 1 mole of the compound of the formula (Ib) in methylene chloride under cooling with ice.

The compounds of the formula (I) according to the present invention show strong controlling activity against nematodes. They can, therefore, be efficiently used as nematicidal agents. The compounds of the formula (I) of the present invention do not exhibit phytotoxicity against crops and can be used for controlling harmful nematodes.

The compounds according to the invention can be used, for example, against nematodes such as *Pratylenchus* spp., *Globodera* spp., such as *Globodera rostochiensis wollenweber*, *Heterodera* spp., such as *Heterodera glycines ichinohe*, *Meloidogyne* spp., *Aphelenchoides* spp., such as *Aphelenchoides basseyi christie*, *Radopholus similis*, *Ditylenchus dipsaci*, *Tylenchulus semipenetrans*, *Longidorus* spp., *Xiphinema* spp., *Trichodorus* spp., *Bursaphelenchus* spp., such as *Bursaphelenchus xylophilis* etc.

The compounds according to the invention are especially useful for combating *Pratylenchus* spp., *Globodera rostochiensis wollenweber*, *Heterodera glycines ichinohe*, *Meloidogyne* spp., *Aphelenchoides basseyi christie*, *Bursaphelenchus xylophilis*.

However, the use of the active compounds according to the invention is in no way restricted to these genera, but also extends in the same manner to other nematodes.

The active compounds can be converted into the customary formulations, such as solutions, emulsions, wettable powders, water dispersible granules, suspensions,

powders, dusting agents, foaming agents, pastes, soluble powders, granules, suspo-emulsion concentrates, microcapsules, fumigants, natural and synthetic materials impregnated with active compound and very fine capsules and polymeric substances.

5 These formulations are prepared in a known manner, for example by mixing the active compounds with extenders, that is liquid solvents, liquefied gas and/or solid diluents or carriers, if appropriate with the use of surface-active agents, that is emulsifiers and/or dispersants and/or foam-formers.

10 If the extender used is water, it is also possible to use, for example, organic solvents as auxiliary solvents. Suitable liquid solvents are essentially: aromatics, such as xylene, toluene, or alkylnaphthalenes, chlorinated aromatics and chlorinated aliphatic hydrocarbons, such as chlorobenzene, chloroethylenes or methylene chloride, aliphatic hydrocarbons, such as cyclohexane or paraffins, for example mineral oil
15 fractions, mineral or vegetable oil, alcohols, such as butanol or glycol, and also their ethers and esters, ketones, such as acetone, methyl ethyl ketone, methyl isobutyl ketone or cyclohexanone, strongly polar solvents, such as dimethylformamide and dimethyl sulphoxide, and also water.

20 Liquefied gas diluents or carriers are liquefied substances which are gases at normal temperature and pressure. Liquefied gas diluents can be, for example, aerosol propellants such as butane, propane, nitrogen gas, carbon dioxide, halogenated hydrocarbons, etc.

25 Suitable solid carriers are:

for example ammonium salts and ground natural minerals, such as kaolins, clays, talc, chalk, quartz, attapulgite, montmorillonite or diatomaceous earth, and ground synthetic minerals, such as finely divided silica, alumina and silicates; suitable solid carriers for granules are: for example crushed and fractionated natural rocks such as
30 calcite, marble, pumice, sepiolite and dolomite, as well as synthetic granules of inorganic and organic meals, and granules of organic material such as sawdust,

coconut shells, maize cobs and tobacco stalks; suitable emulsifiers and/or foam-formers are: for example nonionic and anionic emulsifiers, such as polyoxyethylene fatty acid esters, polyoxyethylene fatty alcohol ethers, for example alkylaryl polyglycol ethers, alkylsulphonates, alkyl sulphates, arylsulphonates and protein hydrolysates; suitable dispersants are: for example lignin-sulphite waste liquors and methylcellulose.

Tackifiers such as carboxymethylcellulose and natural and synthetic polymers in the form of powders, granules or latices, such as gum arabic, polyvinyl alcohol and polyvinyl acetate, as well as natural phospholipids, such as cephalins and lecithins, and synthetic phospholipids, can be used in the formulations. Other additives can be mineral and vegetable oils.

It is possible to use colorants such as inorganic pigments, for example iron oxide, titanium oxide and Prussian Blue, and organic dyestuffs, such as alizarin dyestuffs, azo dyestuffs and metal phthalocyanine dyestuffs, and trace nutrients such as salts of iron, manganese, boron, copper, cobalt, molybdenum and zinc.

The formulations in general contain between 0.01 and 95 per cent by weight of active compound, preferably between 0.1 and 90%, particularly preferably between 0.5 and 90%.

The active compounds according to the invention, as such or in their formulations, can also be used in a mixture with known fungicides, bactericides, acaricides, nematocides or insecticides, to widen, for example, the activity spectrum or to prevent the development of resistance. In many cases, this results in synergistic effects, i.e. the activity of the mixture exceeds the activity of the individual components.

Examples of particularly advantageous mixing components are the following:

Fungicides:

aldimorph, ampropylfos, ampropylfos potassium, andoprim, anilazine, azaconazole, azoxystrobin,

5 benalaxyl, benodanil, benomyl, benzamacril, benzamacril-isobutyl, bialaphos, binapacryl, biphenyl, bitertanol, blastidicid-S, bromuconazole, bupirimate, buthiobate,

calcium polysulphide, capsimycin, captafol, captan, carbendazim, carboxin, carvon, quinomethionate, chlobenthiazole, chlorfenazole, chloroneb, chloropicrin, chlorothalonil, chlozolate, clozylacon, cufraneb, cymoxanil, cyproconazole, cyprodinil, cyprofuram,

10 debacarb, dichlorophen, diclobutrazole, diclofluanid, diclomezine, dicloran, diethofencarb, difenoconazole, dimethirimol, dimethomorph, diniconazole, diniconazole-M, dinocap, diphenylamine, dipyrithione, ditalimfos, dithianon, dodemorph, dodine, drazoxolon,

15 ediphenphos, epoxiconazole, etaconazole, ethirimol, etridiazole, famoxadon, fenapanil, fenarimol, fenbuconazole, fenfuram, fenitropan, fenciclonil, fenpropidin, fenpropimorph, fentin acetate, fentin hydroxide, ferbam, ferimzone, fluazinam, flumetover, fluoromide, fluquinconazole, flurprimidol, flusilazole, flusulfamide, flutolanil, flutriafol, folpet, fosetyl-aluminium, fosetyl-sodium,

20 fthalide, fuberidazole, furalaxyl, furametpyr, furcarbonil, furconazole, furconazole-cis, furmecyclox, guazatine,

hexachlorobenzene, hexaconazole, hymexazole,

imazalil, imibenconazole, iminoctadine, iminoctadine albesilate, iminoctadine triacetate, iodocarb, ipconazole, iprobenfos (IBP), iprodione, irumamycin, isoprothiolane, isovaledione,

25 kasugamycin, kresoxim-methyl, copper preparations, such as: copper hydroxide, copper naphthenate, copper oxychloride, copper sulphate, copper oxide, oxine-copper and Bordeaux mixture,

mancopper, mancozeb, maneb, meferimzone, mepanipyrim, mepronil, metalaxyl,
 metconazole, methasulfocarb, methfuroxam, metiram, metomeclam, metsulfovax,
 mildiomyacin, myclobutanil, myclozolin,
 nickel dimethyldithiocarbamate, nitrothal-isopropyl, nuarimol,
 5 ofurace, oxadixyl, oxamocarb, oxolinic acid, oxycarboxim, oxyfenthiin,
 paclobutrazole, pefurazate, penconazole, pencycuron, phosdiphen, pimaricin,
 piperalin, polyoxin, polyoxorim, probenazole, prochloraz, procymidone,
 propamocarb, propanosine-sodium, propiconazole, propineb, pyrazophos, pyrifenoxy,
 pyrimethanil, pyroquilon, pyroxyfur,
 10 quinconazole, quintozone (PCNB),
 sulphur and sulphur preparations,
 tebuconazole, tecloftalam, tecnazene, tetcyclacis, tetraconazole, thiabendazole,
 thicyofen, thifluzamide, thiophanate-methyl, thiram, tioxyimid, tolclofos-methyl,
 tolylfluanid, triadimefon, triadimenol, triazbutil, triazoxide, trichlamide, tricyclazole,
 15 tridemorph, triflumizole, triforine, triticonazole,
 uniconazole,
 validamycin A, vinclozolin, viniconazole,
 zarilamide, zineb, ziram and also
 Dagger G,
 20 OK-8705,
 OK-8801,
 α -(1,1-dimethylethyl)- β -(2-phenoxyethyl)-1H-1,2,4-triazole-1-ethanol,
 α -(2,4-dichlorophenyl)- β -fluoro-b-propyl-1H-1,2,4-triazole-1-ethanol,
 α -(2,4-dichlorophenyl)- β -methoxy-a-methyl-1H-1,2,4-triazole-1-ethanol,
 25 α -(5-methyl-1,3-dioxan-5-yl)- β -[[4-(trifluoromethyl)-phenyl]-methylene]-1H-1,2,4-
 triazole-1-ethanol,
 (5RS,6RS)-6-hydroxy-2,2,7,7-tetramethyl-5-(1H-1,2,4-triazol-1-yl)-3-octanone,
 (E)-a-(methoxyimino)-N-methyl-2-phenoxy-phenylacetamide,
 isopropyl 1-{2-methyl-1-[[[1-(4-methylphenyl)-ethyl]-amino]-carbonyl]-propyl}-carbamate,
 30 1-(2,4-dichlorophenyl)-2-(1H-1,2,4-triazol-1-yl)-ethanone O-(phenylmethyl) oxime,
 1-(2-methyl-1-naphthalenyl)-1H-pyrrol-2,5-dione,

- 1-(3,5-dichlorophenyl)-3-(2-propenyl)-2,5-pyrrolidinedione,
1-[(diiodomethyl)-sulphonyl]-4-methyl-benzene,
1-[[2-(2,4-dichlorophenyl)-1,3-dioxolan-2-yl]-methyl]-1H-imidazole,
1-[[2-(4-chlorophenyl)-3-phenyloxiranyl]-methyl]-1H-1,2,4-triazole,
5 1-[1-[2-[(2,4-dichlorophenyl)-methoxy]-phenyl]-ethenyl]-1H-imidazole,
1-methyl-5-nonyl-2-(phenylmethyl)-3-pyrrolidinole,
2',6'-dibromo-2-methyl-4'-trifluoromethoxy-4'-trifluoro-methyl-1,3-thiazole-5-
carboxanilide,
2,2-dichloro-N-[1-(4-chlorophenyl)-ethyl]-1-ethyl-3-methyl-cyclopropane-
10 carboxamide,
2,6-dichloro-5-(methylthio)-4-pyrimidinyl thiocyanate,
2,6-dichloro-N-(4-trifluoromethylbenzyl)-benzamide,
2,6-dichloro-N-[[4-(trifluoromethyl)-phenyl]-methyl]-benzamide,
2-(2,3,3-triiodo-2-propenyl)-2H-tetrazole,
15 2-[(1-methylethyl)-sulphonyl]-5-(trichloromethyl)-1,3,4-thiadiazole,
2-[[6-deoxy-4-O-(4-O-methyl- β -D-glycopyranosyl)- α -D-glucopyranosyl]-amino]-4-
methoxy-1H-pyrrolo[2,3-d]pyrimidine-5-carbonitrile,
2-aminobutane,
2-bromo-2-(bromomethyl)-pentanedinitrile,
20 2-chloro-N-(2,3-dihydro-1,1,3-trimethyl-1H-inden-4-yl)-3-pyridinecarboxamide,
2-chloro-N-(2,6-dimethylphenyl)-N-(isothiocyanatomethyl)-acetamide,
2-phenylphenol (OPP),
3,4-dichloro-1-[4-(difluoromethoxy)-phenyl]-1H-pyrrol-2,5-dione,
3,5-dichloro-N-[cyano-[(1-methyl-2-propynyl)-oxy]-methyl]-benzamide,
25 3-(1,1-dimethylpropyl-1-oxo-1H-indene-2-carbonitrile,
3-[2-(4-chlorophenyl)-5-ethoxy-3-isoxazolidinyl]-pyridine,
4-chloro-2-cyano-N,N-dimethyl-5-(4-methylphenyl)-1H-imidazole-1-sulphonamide,
4-methyl-tetrazolo[1,5-a]quinazolin-5(4H)-one,
8-(1,1-dimethylethyl)-N-ethyl-N-propyl-1,4-dioxaspiro[4.5]decane-2-methanamine,
30 8-hydroxyquinoline sulphate,
9H-xanthene-2-[(phenylamino)-carbonyl]-9-carboxylic hydrazide,

bis-(1-methylethyl) 3-methyl-4-[(3-methylbenzoyl)-oxy]-2,5-thiophenedicarboxylate,
 cis-1-(4-chlorophenyl)-2-(1H-1,2,4-triazol-1-yl)-cycloheptanol,
 cis-4-[3-[4-(1,1-dimethylpropyl)-phenyl-2-methylpropyl]-2,6-dimethyl-morpholine
 hydrochloride,

- 5 ethyl [(4-chlorophenyl)-azo]-cyanoacetate,
 potassium hydrogen carbonate,
 methanetetraethiol sodium salt,
 methyl 1-(2,3-dihydro-2,2-dimethyl-1H-inden-1-yl)-1H-imidazole-5-carboxylate,
 methyl N-(2,6-dimethylphenyl)-N-(5-isoxazolylcarbonyl)-DL-alaninate,
 10 methyl N-(chloroacetyl)-N-(2,6-dimethylphenyl)-DL-alaninate,
 N-(2,3-dichloro-4-hydroxyphenyl)-1-methyl-cyclohexanecarboxamide,
 N-(2,6-dimethylphenyl)-2-methoxy-N-(tetrahydro-2-oxo-3-furanyl)-acetamide,
 N-(2,6-dimethylphenyl)-2-methoxy-N-(tetrahydro-2-oxo-3-thienyl)-acetamide,
 N-(2-chloro-4-nitrophenyl)-4-methyl-3-nitro-benzenesulphonamide,
 15 N-(4-cyclohexylphenyl)-1,4,5,6-tetrahydro-2-pyrimidineamine,
 N-(4-hexylphenyl)-1,4,5,6-tetrahydro-2-pyrimidineamine,
 N-(5-chloro-2-methylphenyl)-2-methoxy-N-(2-oxo-3-oxazolidinyl)-acetamide,
 N-(6-methoxy)-3-pyridinyl)-cyclopropanecarboxamide,
 N-[2,2,2-trichloro-1-[(chloroacetyl)-amino]-ethyl]-benzamide,
 20 N-[3-chloro-4,5-bis(2-propinyloxy)-phenyl]-N'-methoxy-methanimidamide,
 N-formyl-N-hydroxy-DL-alanine-sodium salt,
 O,O-diethyl [2-(dipropylamino)-2-oxoethyl]-ethylphosphoramidothioate,
 O-methyl S-phenyl phenylpropylphosphoramidothioate,
 S-methyl 1,2,3-benzothiadiazole-7-carbothioate, and
 25 spiro[2H]-1-benzopyran-2,1'(3'H)-isobenzofuran]-3'-one,

Bactericides:

bronopol, dichlorophen, nitrapyrin, nickel dimethyldithiocarbamate, kasugamycin,
 octhilinone, furancarboxylic acid, oxytetracyclin, probenazole, streptomycin,
 30 tecloftalam, copper sulphate and other copper preparations.

Insecticides / acaricide / nematocides:

abamectin, acephate, acetamiprid, acrinathrin, alanycarb, aldicarb, aldoxycarb, alpha-cypermethrin, alphamethrin, amitraz, avermectin, AZ 60541, azadirachtin, azamethiphos, azinphos A, azinphos M, azocyclotin,

5 Bacillus popilliae, Bacillus sphaericus, Bacillus subtilis, Bacillus thuringiensis, baculoviruses, Beauveria bassiana, Beauveria tenella, bendiocarb, benfuracarb, bensultap, benzoximate, betacyfluthrin, bifenazate, bifenthrin, bioethanomethrin, bio-permethrin, BPMC, bromophos A, bufencarb, buprofezin, butathiofos, butocarboxim, butylpyridaben,

10 cadusafos, carbaryl, carbofuran, carbophenothion, carbosulfan, cartap, chloethocarb, chlorethoxyfos, chlorfenapyr, chlorfenvinphos, chlorfluazuron, chlormephos, chlorpyrifos, chlorpyrifos M, chlovaporthrin, cis-resmethrin, cispermethrin, clocythrln, cloethocarb, clofentezine, cyanophos, cycloprene, cycloprothrin, cyfluthrin, cyhalothrin, cyhexatin, cypermethrin, cyromazine,

15 deltamethrin, demeton M, demeton S, demeton-S-methyl, diafenthiuron, diazinon, dichlorvos, diflubenzuron, dimethoat, dimethylvinphos, diofenolan, disulfoton, docusat-sodium, dofenapyn,

eflusilanate, emamectin, empenthrin, endosulfan, Entomopffthora spp., esfenvalerate, ethiofencarb, ethion, ethoprophos, etofenprox, etoxazole, etrimfos,

20 fenamiphos, fenazaquin, fenbutatin oxide, fenitrothion, fenothiocarb, fenoxacrim, fenoxycarb, fenpropathrin, fenpyrad, fenpyrithrin, fenpyroximate, fenvalerate, fipronil, fluazinam, fluazuron, flubrocylthrin, flucycloxuron, flucythrinate, flufenoxuron, flutenzine, fluvalinate, fonophos, fosmethilan, fosthiazate, fubfenprox, furathiocarb,

25 granulosi viruses,

halofenozide, HCH, heptenophos, hexaflumuron, hexythiazox, hydroprene,

imidacloprid, isazofos, isofenphos, isoxathion, ivermectin,

nuclear polyhedrosis viruses,

lambda-cyhalothrin, lufenuron

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malathion, mecarbam, metaldehyde, methamidophos, Metharhizium anisopliae, Metharhizium flavoviride, methidathion, methiocarb, methomyl, methoxyfenozide, metolcarb, metoxadiazone, mevinphos, milbemectin, monocrotophos, naled, nitenpyram, nithiazine, novaluron,

5 omethoat, oxamyl, oxydemethon M, Paecilomyces fumosoroseus, parathion A, parathion M, permethrin, phenthoat, phorat, phosalone, phosmet, phosphamidon, phoxim, pirimicarb, pirimiphos A, pirimiphos M, profenofos, promecarb, propoxur, prothiofos, prothoat, pymetrozine, pyraclofos, pyresmethrin, pyrethrum, pyridaben, pyridathion, pyrimidifen,

10 pyriproxyfen, quinalphos, ribavirin, salithion, sebufos, silafluofen, spinosad, sulfotep, sulprofos, tau-fluvalinate, tebufenozide, tebufenpyrad, tebupirimiphos, teflubenzuron,

15 tefluthrin, temephos, temiviphos, terbufos, tetrachlorvinphos, theta-cypermethrin, thiamethoxam, thiapronil, thiatriphos, thiocyclam hydrogen oxalate, thiodicarb, thiofanox, thuringiensin, traloccythrin, tralomethrin, triarathene, triazamate, triazophos, triazuron, trichlophenidine, trichlorfon, triflumuron, trimethacarb, vamidothion, vaniliprole, Verticillium lecanii,

20 YI 5302, zeta-cypermethrin, zolaprofos, (1R-cis)-[5-(phenylmethyl)-3-furanyl]-methyl 3-[(dihydro-2-oxo-3(2H)-furanylidene)-methyl]-2,2-dimethylcyclopropanecarboxylate, (3-phenoxyphenyl)-methyl 2,2,3,3-tetramethylcyclopropanecarboxylate,

25 1-[(2-chloro-5-thiazolyl)methyl]tetrahydro-3,5-dimethyl-N-nitro-1,3,5-triazine-2(1H)-imine, 2-(2-chloro-6-fluorophenyl)-4-[4-(1,1-dimethylethyl)phenyl]-4,5-dihydro-oxazole, 2-(acetlyoxy)-3-dodecyl-1,4-naphthalenedione, 2-chloro-N-[[[4-(1-phenylethoxy)-phenyl]-amino]-carbonyl]-benzamide,

30 2-chloro-N-[[[4-(2,2-dichloro-1,1-difluoroethoxy)-phenyl]-amino]-carbonyl]-benzamide,

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3-methylphenyl propylcarbamate.

4-[4-(4-ethoxyphenyl)-4-methylpentyl]-1-fluoro-2-phenoxy-benzene,

4-chloro-2-(1,1-dimethylethyl)-5-[[2-(2,6-dimethyl-4-phenoxyphenoxy)ethyl]thio]-
3(2H)-pyridazinone,

5 4-chloro-2-(2-chloro-2-methylpropyl)-5-[(6-iodo-3-pyridinyl)methoxy]-3(2H)-
pyridazinone,

4-chloro-5-[(6-chloro-3-pyridinyl)methoxy]-2-(3,4-dichlorophenyl)-3(2H)-
pyridazinone,

Bacillus thuringiensis strain EG-2348,

10 [2-benzoyl-1-(1,1-dimethylethyl)-hydrazinobenzoic acid,
2,2-dimethyl-3-(2,4-dichlorophenyl)-2-oxo-1-oxaspiro[4.5]dec-3-en-4-yl butanoate,
3-[(6-chloro-3-pyridinyl)methyl]-2-thiazolidinylidene]-cyanamide,

dihydro-2-(nitromethylene)-2H-1,3-thiazine-3(4H)-carboxaldehyde,

ethyl [2-[[1,6-dihydro-6-oxo-1-(phenylmethyl)-4-pyridazinyl]oxy]ethyl]-carbamate,
15 N-(3,4,4-trifluoro-1-oxo-3-butenyl)-glycine,

N-(4-chlorophenyl)-3-[4-(difluoromethoxy)phenyl]-4,5-dihydro-4-phenyl-1H-
pyrazole-1-carboxamide,

N-[(2-chloro-5-thiazolyl)methyl]-N'-methyl-N''-nitro-guanidine,

N-methyl-N'-(1-methyl-2-propenyl)-1,2-hydrazinedicarbothioamide,

20 N-methyl-N'-2-propenyl-1,2-hydrazinedicarbothioamide,

O,O-diethyl [2-(dipropylamino)-2-oxoethyl]-ethylphosphoroamidothioate.

A mixture with other known active compounds, such as herbicides, or with fertilizers
and growth regulators is also possible.

25

Furthermore, when used as nematicides, the active compounds according to the
invention can be present in their commercial formulations and in the use forms,
prepared from these formulations, as a mixture with synergists. Synergists are
compounds which increase the action of the active compounds, without it being
30 necessary for the synergist added to be active itself.

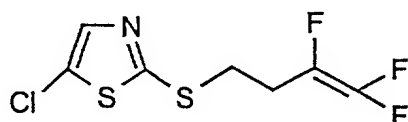
The active-compound content of the use forms prepared from the commercial formulations can vary within wide limits. The active-compound concentration of the use forms can be from 0.0000001 to 95% by weight of active compound, preferably between 0.0001 and 1% by weight.

5 Application is carried out in a customary manner adapted to the use forms.

The preparation and the use of the compounds according to the present invention will be described more specifically by the following examples. However, the present invention should not be restricted to them in any way. "Parts" mean "parts by weight" unless specified otherwise.

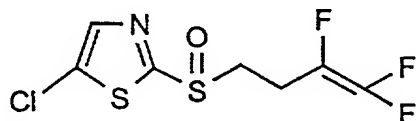
Preparation Examples

Example 1



20 2-(3,4,4-Trifluoro-3-butenylthio)thiazole (6.75 g, 30 mM) is dissolved in carbon tetrachloride (60 ml). N-chlorosuccinimide (4.8 g) is added to the solution and refluxed for 18 hours by heating. As soon as the reaction has reached room temperature, the mixture is filtered and the solvent is distilled off. The concentrate is purified by column chromatography (eluent: hexane/ethyl acetate = 90/10) to obtain 5-chloro-2-(3,4,4-trifluoro-3-butenylthio)thiazole as pale yellow liquid (n_D^{20} 1.5326).

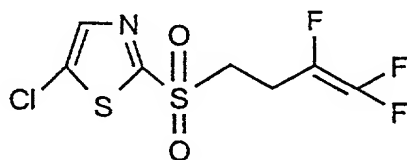
Example 2



5-Chloro-2-(3,4,4-trifluoro-3-butenylthio)thiazole (2.07 g, 8 mM) is dissolved in chloroform (40 ml). m-chloroperoxybenzoic acid (1.38 g) is added to the solution under ice cooling (temperature below 4°C) and further stirred for 8 hours at a temperature below 4°C.

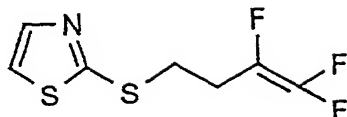
10% sodium thiosulfate is added to the solution and the solution is then fractionated. The chloroform layer is washed with 5% aqueous solution of sodium hydroxide and dried over anhydrous magnesium sulfate. The solvent is distilled off and the concentrate is purified by column chromatography (eluent: hexane/ethyl acetate = 90/10) to obtain 5-chloro-2-(3,4,4-trifluoro-3-butenylsulfinyl)thiazole (1.5 g) as pale yellow liquid (n_D^{20} 1.5380).

Example 3



To the solution of 5-chloro-2-(3,4,4-trifluoro-3-butenylthio)thiazole (2.60 g, 10 mM) and acetic acid (28 g) 31% hydrogen peroxide water (3.29 g) is added and stirred at 55-60°C for 6 hours. After cooling to 5°C the reaction mixture is adjusted to pH 6 by adding an appropriate amount of an aqueous solution of sodium hydroxide, diluted with water and extracted three times with chloroform (25 ml). The chloroform layer is washed with water, 10% sodium thiosulfate and water in this order, and dried over anhydrous sodium sulfate. The solvent is distilled off and the concentrate is purified by column chromatography (eluent: hexane/ethyl acetate = 90/10) to obtain 5-chloro-2-(3,4,4-trifluoro-3-butenylsulfonyl)thiazole (2.2 g) as pale yellow liquid (n_D^{20} 1.5205).

Reference Example



2-Mercaptothiazole (5.18 g), potassium carbonate (6.72 g) and 4-bromo-1,1,2-trifluorobutene-1 (9.21 g) are refluxed in acetonitrile (60 ml) in the presence of argon gas for 6 hours by heating. After the reaction mixture has reached room temperature, it is filtered and the solvent is distilled off. The residue is dissolved in dichloromethane and washed with 5% aqueous solution of sodium hydroxide and water in this order. It is dried over anhydrous sodium sulfate and purified by column chromatography (eluent: dichloromethane) to obtain 2-(3,4,4-trifluoro-3-butenylthio)thiazole (8.6 g) as pale yellow liquid (n_D^{20} 1.5200).

Use Examples

Example 1 Test against Meloidogyne spp. (Soil pot test)

Preparation of test agent:

1 Part of the active compound is impregnated to 99 parts of pumice to obtain fine granules.

Test method:

The test agent prepared as mentioned above was added to soil contaminated with Meloidogyne incognita to a chemical concentration of 10 ppm and homogeneously mixed by stirring. A pot (1/5000 are) was filled with the soil. About 20 seeds of tomato (variety: Kurihara) were sown per pot. After cultivation in a greenhouse for 4 weeks, they were carefully pulled out not to damage the roots and the root knot index and the controlling effect were determined as follows.

- Degree of damage
- 0: No knots were formed (Complete control).
 - 1: A few knots were formed.
 - 2: Knots were formed to a medium extent.
 - 3: Knots were formed to an intense extent.
 - 5 4: Knots were formed to the most intense extent (which corresponds to non-treatment).

$$\text{Root knot index} = \frac{\Sigma (\text{degree of damage} \times \text{number of individuals})}{\text{Total number of tested individuals} \times 4} \times 100$$

The controlling effect of the compounds tested can then be evaluated according to the following equation:

$$\text{Controlling effect [\%]} = \frac{(\text{Root knot index at non-treated area} - \text{Root knot index at treated area})}{\text{Root knot index at non-treated area}} \times 100$$

The evaluation of the controlling effects of the compounds according to the present invention was done on the basis of the values of the controlling effect which can be obtained in the above-mentioned way and were connected with the following standards:

- 25 a: Controlling effect 100-71%
- b: Controlling effect 70-50%
- c: Controlling effect less than 50%
- d: Controlling effect 0%

30 Results are shown in the following Table 1.

Table 1

Compound Ex. No.	Concentration of active ingredient [ppm]	Evaluation of controlling effect
1	10	a
2	10	a
3	10	a

Formulation Examples

5

Example 1 (Granule)

10 To a mixture of 10 parts of a compound according to the present invention (Example No. 1), 30 parts of bentonite (montmorillonite), 58 parts of talc and 2 parts of ligninsulphonate salt, 25 parts water are added, well kneaded, worked up into granules of 10-40 mesh with the help of an extrusion granulator and dried at 40-50°C to obtain granules.

15

Example 2 (Granule)

95 Parts of clay mineral particles having a particle diameter distribution of 0.2-2 mm are put into a rotary mixer. While rotating it, 5 parts of a compound according to the present invention (Example No. 2) are sprayed onto the mineral particles together with a liquid diluent to obtain uniformly wetted particles and the particles are then
20 dried at 40-50°C to obtain granules.

Example 3 (Emulsifiable concentrates)

25 30 Parts of a compound according to the present invention (Example No. 3), 55 parts of xylene, 8 parts of polyoxyethylene alkyl phenyl ether and 7 parts of calcium alkylbenzenesulphonate are mixed and stirred to obtain an emulsion.

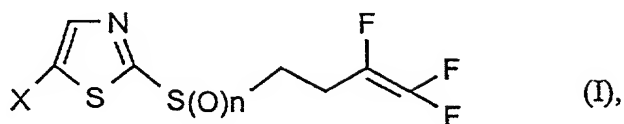
Example 4 (Wettable powder)

15 parts of a compound according to the present invention (Example No. 1), 80 parts
5 of a mixture of white carbon (hydrous amorphous silicon oxide fine powders) and
powder clay (1:5), 2 parts of sodium alkylbenzenesulphonate and 3 parts of sodium
alkylnaphthalenesulphonate-formalin-condensate are crushed and mixed together to
obtain a wettable powder.

00000000000000000000000000000000

Claims

1. Compounds of the formula (I)



wherein

X represents halogen, and

n represents 0, 1 or 2.

2. Compounds of the formula (I) according to claim 1, wherein

X represents fluoro, chloro or bromo, and

n represents 0 or 2.

3. Compounds of the formula (I) according to claim 1 or claim 2, wherein

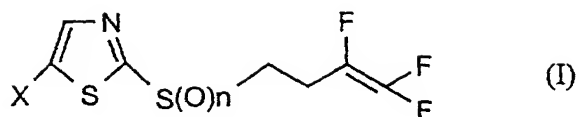
X represents chloro or bromo, and

n represents 2.

4. Compounds of the formula (I) according to claims 1 to 3, wherein

X represents chloro.

5. Process for preparing compounds of the formula (I)



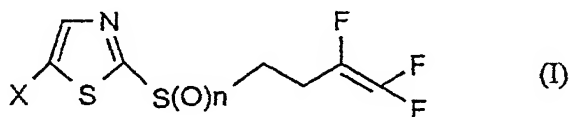
wherein

X is as defined in claims 1 to 4, and

n represents 0,

characterized in that 2-(3,4,4-trifluoro-3-butenylthio)thiazole is reacted with a halogenating agent, if appropriate in the presence of inert solvents.

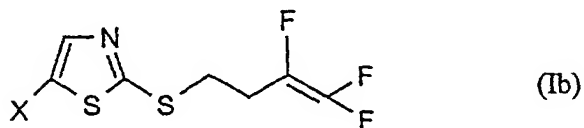
6. Process for preparing compounds of the formula (I)



wherein

n represents 1 or 2, and

X is as defined in claims 1 to 4, characterized in that compounds of the formula (Ib)



wherein

X is as defined in claims 1 to 4.

are reacted with an oxidizing agent, if appropriate in the presence of inert

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solvents.

7. Nematicidal compositions, characterized in that they contain at least one compound of the formula (I) according to claims 1 to 4.

5

8. A method of combating nematodes, characterized in that compounds of the formula (I) according to claims 1 to 4 are allowed to act on nematodes and/or their habitat.

10

9. Use of the compounds of the formula (I) according to claims 1 to 4 for combating nematodes.

10. Process for preparing nematicidal compositions, characterized in that the compounds of the formula (I) according to claims 1 to 4 are mixed with extenders and/or surface active agents.

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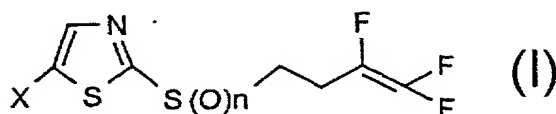
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(54) Title: NEMATICIDAL TRIFLUOROBUTENES



(57) Abstract: The invention relates to compounds of formula (I) in which X represents halogen, and n represents 0, 1 or 2, to a process for their preparation and to their use as nematicides.

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COMBINED DECLARATION AND POWER OF ATTORNEY

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As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name. I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought

on the invention entitled

NEMATICIDAL TRIFLUOROBUTENES ✓

the specification of which is attached hereto,

or was filed on **June 28, 2000** ✓

as a PCT Application Serial No. **PCT/IB00/00868** ✓

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s), the priority(ies) of which is/are to be claimed:

11/191638 ✓
(Number)

Japan ✓
(Country)

July 6, 1999 ✓
(Month/Day/Year Filed)

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose the material information as defined in Title 37, Code of Federal Regulations, §1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Nit 364-US

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